



D1.2.2 Use Case Specifications Patient Journey

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Project PLAYTIME

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Contents

1 Scenario main field study	4
2 Requirements.....	6
2.1 Patient requirements.....	6
2.2 Group requirements.....	6
3 Patient Journey.....	8
3.1 Preparation and introduction	8
3.2 Overview main field study.....	8
3.3 Schedule testing period.....	9
3.4 Evaluations.....	12
4 End of the PLAYTIME project	13
4.1 Example scenario.....	13

1 Scenario main field study

Mrs. J. is 74 years old and lives with her husband in an apartment. Mrs. J. owned a grocery store for many years. Three years ago, Mrs. J. has been diagnosed with Alzheimer. Mrs. J. has difficulties with daily activities. Her husband is a golfer and is a few days per week on the course. During these days, Mrs. J. is most of her time inactive. Mrs. and Mr. J. have two children who live at the other side of the country. They come home during weekends and holidays.

Mrs. J. visits a group for people with dementia once every week. The group leader has informed Mrs. J. and Mr. J. about the possibility to increase Mrs. J's daytime activities with the serious game PLAYTIME. The group leader provides a flyer about the project PLAYTIME to Mrs. and Mr. J. Mrs. J. is very interested in the project and her husband sends an e-mail to a trained healthcare professional of GGZ to request more information. The trained healthcare professional of GGZ sends an information letter and informed consent to Mrs. and Mr. J. After two weeks, the health care professional calls Mrs. and Mr. J. to ask if they are still interested to join the project. Mr. J. tells that they are looking forward to test the serious game PLAYTIME for a period of ten weeks. The healthcare professional of GGZ makes an appointment to visit Mrs. and Mr. J at their home.

During the first home visit, the healthcare professional of GGZ determines together with the researcher of TIU if Mrs. J meets the inclusion criteria. They will do this by administering the Clinical Dementia Rating (CDR) and by performing the three tests of the MoveTest, including (1) a balance test with three difficulty levels, (2) a gait test (four meters at comfortable speed) and (3) a five times repeated chair rise test. The CDR-score of Mrs. J is 1.0 and her score of the MoveTest is 8 out of 12 points. Subsequently, a short personal interview is conducted with Mrs. and Mr. J. to collect some background information regarding Mrs. J.'s cognitive, social-emotional and physical abilities and the motivation of both Mrs. and Mr. J to participate in the project and test PLAYTIME. The healthcare professional of GGZ and the researcher of TIU conclude that Mrs. J is included in the main field study of the project. As one of the final steps of the first home visit, the MoveMonitor will be demonstrated and explained to Mrs. and Mr. J. Mrs. J is asked to wear the MoveMonitor for 4 till 7 days (24 hours per day). In addition, two questionnaires, including (1) the Neuropsychiatric Inventory (NPI) and (2) the Bristol Activities of Daily Living (B-ADL) will be handed to Mr. J. The healthcare professional of GGZ and the researcher of TIU ask if Mr. J. can complete the questionnaire in the upcoming two weeks and, when completed, can send it back via post, using the provided envelop.

After four weeks, the healthcare professional of GGZ and the researcher of PLAYTIME visit Mrs. and Mr. J again to provide them the Tablet PC with the PLAYTIME application, demonstrate how PLAYTIME works, and address any remaining questions. Also the instruction manual of PLAYTIME, an overview of the testing period and contact information of the healthcare professional of GGZ and the researcher of TIU will be provided to Mrs. and Mr. J. After the home visit, Mrs. and Mr. start testing PLAYTIME for ten weeks.

Mrs. J. plays PLAYTIME every week in a group with four other persons with dementia at her daytime activity center. The group uses the PLAYTIME mat with cones and answers questions, performs movement exercises and discusses realistic scenarios. The questions are answered individually, but when a question is too difficult, the other group members are encouraged to help each other. The healthcare professional of GGZ will visit the group session in the fifth to evaluate the group sessions and answer eventual questions.

Mrs. J. practices at least once a week at home with PLAYTIME on a tablet PC. Mr. J. stimulates her to play PLAYTIME. The cognitive, physical and attention exercises of PLAYTIME are suitable. They are not too easy nor too difficult and stimulate Mrs. J. to play other games. Mrs. J. plays the social-emotional trainings module 'SERES' once a week, which provides him with insight into the behavior of Mrs. J. and improves his coping skills. The results of the affective slider of the motion module provide Mrs. and Mr. insights into the interplay between Mrs. J. mood and her performance during the Dementia Tablet, SERES and MIRA.

After five testing weeks, the healthcare professional of GGZ and the researcher of TIU visit Mrs. and Mr. J. again at home to answer queries/problems related to testing PLAYTIME and conduct a mid-term evaluation interview to evaluate PLAYTIME. The interview focusses on (1) the experiences of Mrs. and Mr. J. with PLAYTIME in general, (2) the difficulties that arose when playing PLAYTIME, (3) the implementation of PLAYTIME in Mrs. and Mr. J.'s daily life, and (4) Mrs. and Mr. J.'s motivation to continue with PLAYTIME. During the home visit, the healthcare professional of GGZ and the researcher of TIU also administer the MoCA with Mrs. J. and explain again the MoveMonitor.

After the home visit, Mrs. J. wears the MoveMonitor for seven days and, subsequently, send it back to MCR via the provided envelop. Mrs. and Mr. J. can see the results in the PLAYTIME application at the Tablet PC. The results provide them a clear picture of Mrs. J.'s inactive periods, which enable them to adjust her physical activities together with their professional caregiver.

One week before the last home visit takes place, two questionnaires, including (1) a self-constructed final evaluation questionnaire and (2) the NPI, are sent by post to Mrs. and Mr. J. The self-constructed final evaluation questionnaire contains several statements regarding (1) the usability, feasibility, appropriateness and acceptability of PLAYTIME, (2) Mrs. and Mr. J.'s motivation to continue with PLAYTIME and (3) the implementation of PLAYTIME in Mrs. and Mr. J.'s daily life.

After the ten week testing period, the healthcare professional of GGZ and the researcher of TIU will visit Mrs. and Mr. J. for the last time at home to collect the Tablet PC and the completed questionnaires. The healthcare professional of GGZ administers the CRD and performs the MoveTest with Mrs. J. to evaluate her cognitive and physical states. Eventually, Mrs. and Mr. J. are interviewed to evaluate PLAYTIME with respect to (1) implementation, (2) usability, acceptability, feasibility and appropriateness and (3) Mrs. and Mr. J.'s motivation.

2 Requirements

2.1 Patiënt requirements

A person with dementia will be included to participate in the Main Field Study when (s)he:

- Diagnosed with dementia as formulated in DSM-5: minor and major neurocognitive disorders (NCD) caused by Alzheimer, Lewy Bodies, vascular diseases, frontotemporal lobar degeneration, Parkinson's dementia or multiple origin.
- In an early to moderate stage of dementia with compatible scores on the CDR
- Still lives at home in the region of Eindhoven or Graz.
- Has an involved informal caregiver.
- Speaks Dutch or German.
- Has no severe visual and auditory processing disorders.
- Has sufficient physical performance (at least 1 point on the three controlled tests MoveTest).

A person with dementia who meets any of the following criteria will be excluded from participation in this study:

- Has NCD due to traumatic brain injury, substance/medication-induced NCD, NCD due to HIV infection, NCD due to Prion disease, NCD due to Huntington's disease.
- Has symptoms compatible with dementia at an advanced stage or not living at home anymore.
- Presents the condition of cognitive deficits associated with delirium.
- Diagnosed with Mild Cognitive Impairment (MCI).
- Informal caregivers speaks no Dutch and/or has severe visual and auditory processing disorders.

2.2 Group requirements

- Interactive mat with 5 cones
- Tablet PC
- Large table with sturdy chairs (for balance during the movement exercises)

3 Patient journey

3.1 Preparation and introduction

People with dementia will mainly be recruited via existing daytime activity centers. During recruitment, the healthcare professional will provide information flyers to the group leaders, which they can use to invite eligible study participants to participate in the project. Existing daytime activity centers will be recruited via the process described in section 3.1.2.

3.1.1 People with dementia

- Eligible study participants will receive an information flyer from the group leader of their daytime activity center about the project PLAYTIME.
- If both the person with dementia his or her informal caregiver are interested in participating in the project, they have to contact the healthcare professional of GGZ or the group leader of the daytime activity center. Subsequently, the healthcare professional of GGZ will send an information letter and informed consent to them by post or email.
- After two weeks, the healthcare professional of GGZ will contact the person with dementia and his or her informal caregiver to ask if they are still interested in participating in the project, to address any remaining questions and to verify if they have received the information letter and informed consent. When the person with dementia and his or her informal caregiver solicit their preliminary agreement to participate, the healthcare professional of GGZ will make an appointment to visit them at home.
- After scheduling an appointment, the healthcare professional of GGZ will visit a PWD and his or her informal caregiver at home together with the researcher of TIU. The main purposes of this home visit are to check and the informed consent, to verify if the inclusion are by (by CDR and MoveTest). If all inclusion criteria are confirmed, the person with dementia and his or her informal caregiver will jointly be interviewed to collect some background/baseline information on their cognitive, social-emotional and physical status and their motivation to participate in the project and test PLAYTIME. In addition,, two questionnaires will be handed to the informal caregiver, including the NPI and B-ADL. The informal caregiver will be asked to complete the questionnaires in the upcoming two weeks, and when complete, to send it back via post, using the provided envelope. Finally, the healthcare professional of GGZ and the researcher of TIU will demonstrate and explain the MoveMonitor. The person with dementia will be asked to wear the MoveMonitor for 4 till 7 days (24 hours per day) and, afterwards, can end it back to MCR using the provided envelop.
- At the beginning of the main field study, the healthcare professional of GGZ and the researcher of TIU will visit the person with dementia and his/her informal caregiver again

to demonstrate and explain how PLAYTIME works at a Tablet PC, address any remaining questions, and to guide the attention exercise with the person with dementia (controlled environment). At the end of the home visit, an instruction manual and an overview of the 10-week testing period will be provided to the person with dementia and his/her informal caregiver.

3.1.2 Group

- The healthcare professional will call daytime activity centers to inform if they are interested in participating in the main field study and would like to be further informed.
- The healthcare professional of GGZ will visit the daytime activity center to explain the project step by step, determine if requirements can be met, and demonstrate PLAYTIME.
- If the group leaders of the daytime activity centers want to participate in the main field study, the healthcare professional of GGZ will provide information flyer to them, which they can use to invite eligible study participants of their daytime activity center to participate the project. If both the person with dementia his or her informal caregiver are interested in participating in the project, they have to contact the healthcare professional of GGZ or the group leader of the daytime activity center
- After two weeks, the healthcare professional of GGZ will call the group leaders of the daytime activity centers to inform if (and how much) persons with dementia are interested in participating in the main field study.
- At the beginning of the main field study, the healthcare professional of GGZ will visit the daytime activity centers to explain how PLAYTIME works, address any remaining questions and provide the Tablet PC, mat and cones. At the end of the home visit, an instruction manual of PLAYTIME and an overview of the 10-week testing period will be provided to the group leaders.

3.2 Overview of main field study

The serious game PLAYTIME will be tested in three different ways during the main field study: (1) the person with dementia will test PLAYTIME at home and (2) in during group gatherings, and (3) the informal caregiver will test the social-emotional training module 'SERES' at home. In figure 1, an overview of the PLAYTIME modules that will be tested in the main field study is provided.

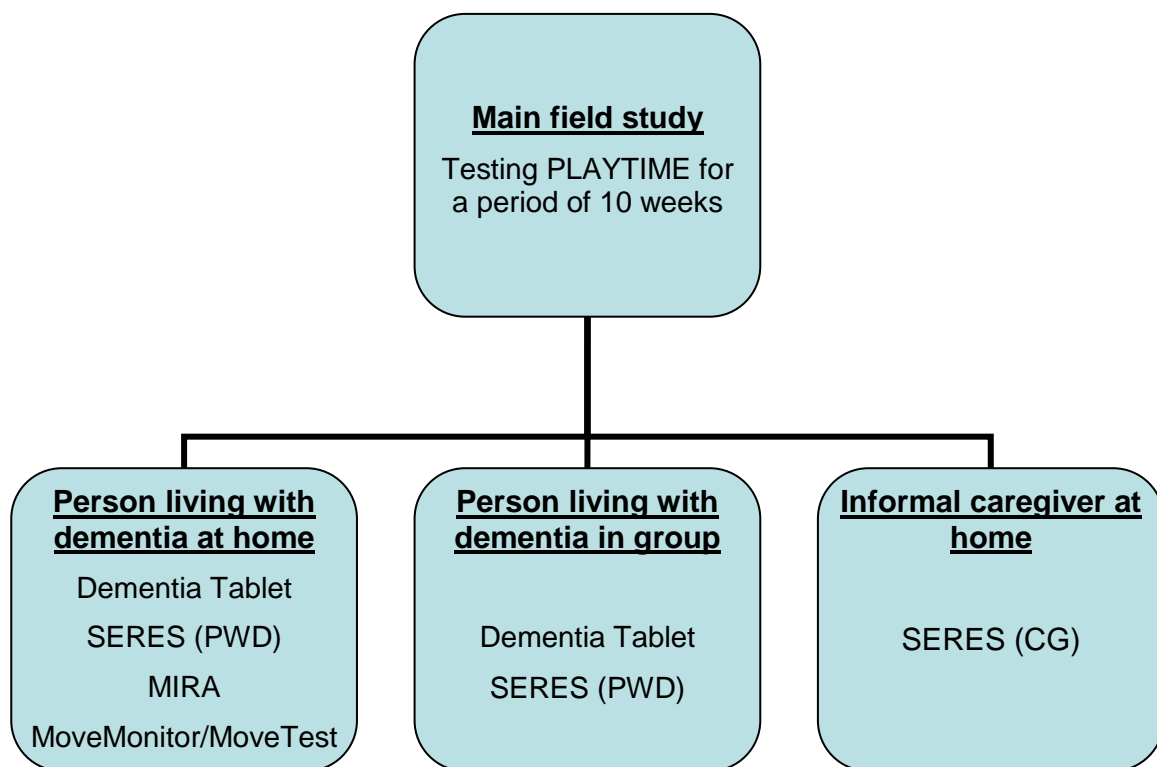


Figure 1. Overview of the PLAYTIME modules tested in the main field study.

3.3 Schedule testing period

In the main field study, people with dementia and their informal caregivers will be asked to test PLAYTIME at home and during group gatherings for a period of ten weeks. An overview of the procedures of the 10-week testing period is provided below.

Week	Location	Procedures
1	Home	Person with dementia tests Dementia Tablet, MIRA and SERES (min. one module a week) Informal caregiver tests SERES
	Group	Person with dementia attends group meeting

	Group	<p>SERES (min. one module a week)</p> <p>Informal caregiver tests SERES</p> <p>Person with dementia attends group meeting</p>
7	Home	<p>Person with dementia tests Dementia Tablet, MIRA and SERES (min. one module a week)</p> <p>Informal caregiver tests SERES</p>
	Group	<p>Person with dementia attends group meeting</p>
8	Home	<p>Person with dementia tests Dementia Tablet, MIRA and SERES (min. one module a week)</p> <p>Informal caregiver tests SERES</p>
	Group	<p>Person with dementia attends group meeting</p>
9	Home	<p>Person with dementia tests Dementia Tablet, MIRA and SERES (min. one module a week)</p> <p>Informal caregiver tests SERES</p>
	Group	<p>Person with dementia attends group meeting</p>
10	Home	<p>Person with dementia tests Dementia Tablet, MIRA and SERES (min. one module a week)</p> <p>Informal caregiver tests SERES</p>
	Group	<p>Person with dementia attends group meeting</p>

3.4 Evaluations

3.4.1 Mid-term evaluations

- During the fifth testing week, the healthcare professional of GGZ and the researcher of PLAYTIME will visit the PWD and his or her informal caregiver at home to evaluate (1) the experiences of persons with dementia and their informal caregivers with PLAYTIME in general, (2) the difficulties that arose when playing PLAYTIME, (3) the implementation of PLAYTIME in daily life, and (4) the motivation of persons with dementia and their informal caregivers to continue with PLAYTIME. During this home visit, the healthcare professional of GGZ and the researcher of TIU will administer to MoCA to the person with dementia and asks if the person with dementia will again wear the MoveMonitor for 4 till 7 days (24 hours per day).
- The healthcare professional of GGZ and the researcher of TIU will also visit the daytime activity centers in the fifth testing week to attend the group gathering and evaluate (1) the difficulties that arose when playing PLAYTIME in a group, and (2) the group dynamics during the use of PLAYTIME.

3.4.2 Final evaluations

- After the 10-week testing period, the healthcare professional of GGZ and the researcher of will visit the person with dementia at home to conduct a final evaluation interview focusing on (1) implementation of PLAYTIME in daily life, (2) the usability, acceptability, feasibility and appropriateness of PLAYTIME and (3) users' motivation to continue with PLAYTIME. Furthermore, the sent questionnaires (NPI and self-constructed final evaluation questionnaire) and the Tablet PC will be collected during this home visit, and the cognitive and physical status of the person with dementia will be evaluated by means of the CDR and MoveTest.
- The healthcare professional of GGZ and the researcher of TIU will also visit the daytime activity center after the testing period to evaluate (1) the different exercise in the group version of PLAYTIME, (2) the user experiences and (3) the usability, acceptability, feasibility and appropriateness of PLAYTIME in a group. The mat, cones and Tablet PC will be collected at the end of the visit.

4 The end of the PLAYTIME project

4.1 Example scenario

Mrs. J. is 76 years old. She lives with her husband in an apartment. Mrs. J. owned a grocery store for many years. Five years ago, Mrs. J. has been diagnosed with Alzheimer. Her husband has a few hobby's and leaves the apartment a few hours per week. During these hours, Mrs. J. has difficulties with filling in her daytime activities. When Mrs., J.'s husband is at home, she goes out for a walk, enjoys cooking and plays cards. Mrs. and Mr. J have a two children, who are living at the other side of the country. Their children come home during weekends and holidays.

Mrs. J. has started playing PLAYTIME in the main field study. She joined a group where PLAYTIME was played every week. Because Mrs. J. enjoyed these sessions so much, she attends these session now three time a week. Mrs. J. finds the physical exercises very nice and the players in her group perform the movement exercises all together. The questions of the social-emotional trainings module 'SERES' lead to interesting conversations. Mrs. J. enjoys when the group is helping each other with the questions. The players of her group find it is very nice that they can choose the topic themselves. Every week, someone else gets to choose a topic or there is chosen topic that fits time of year. This brings extra spirit to events, like Christmas, and leads to a conversation about the activities they are going to do.

Mrs. J. practices at least two times a week at home with the Dementia Tablet. Her husband suggests it when he leaves the house. Mrs. J. plays it at least 20 minutes. She enjoys the puzzles very much. They are not too easy nor too difficult and stimulate her to play other games as well. Sometimes, Mrs. J. plays the Dementia Tablet together with her husband. They also like to play the social realistic scenarios of SERES. These scenarios lead to conversations about all sorts of real live events and learned Mr. J. different options to cope with multiple situations. The results of the affective slider of the motion module provide Mrs. and Mr. insights into the interplay between Mrs. J. mood and her performance during the Dementia Tablet, SERES and MIRA.

Results of the MoveMonitor show that Mrs. J. does not move frequently in the weekends. Often, the children visit Mrs. J in the weekends and, then, she sits most of the time because her children take care of everything. The family of Mrs. J. became aware of this by the rapport of the MoveMonitor. Now, the family of Mrs. J. motivates her to get active: sometimes they go for a walk, they cook together, or do some other activities. The SERES module has provided them with some suggestions to deal with this. The next MoveMonitor report will show that Mrs. J.'s activities has been increased in the weekends.

Overall, Mrs. J. is more active. There are more activities during the week that stimulates Mrs. J. Because of this, she enjoys her week more and her mood is improved. Mrs. J. sleeps better because she is more active during the day. Mrs. J. is more comfortable to leave the house for his activities and he also sleeps better. Therefore, the quality of life of Mrs. and Mr. J. has been

improved. They both exercise more frequently during the week. Mrs. and Mr. J want to continue with PLAYTIME and recommend it also to other people with dementia.